

CLAIMS

Having thus described the invention, what is claimed is:

1. Flange corner forming apparatus comprising:

- (a) a die having a planar upper surface upon which a workpiece may be supported and having side surfaces intersecting at a flange forming corner;
- (b) workpiece clamping means for clamping the workpiece securely against said planar surface of said die with the flange corner of the workpiece extending along said corner of said die;
- (c) a forming roll cooperatively configured with respect to said flange forming corner and adapted to form the flange of said workpiece about said die corner;
- (d) a wedge movable between the workpiece and said die corner;
- (e) means for moving said clamping means to clamp the workpiece against said die;
- (f) means for moving said forming roll relative to said die and in an axis generally parallel to said flange forming corner;
- (g) means for moving said wedge between said die and the workpiece; and
- (h) control means for controlling the movement means for said wedge, said forming roll and said clamping means.

2. The flange corner forming apparatus in accordance with Claim 1 wherein said movement means include piston/cylinder assemblies.

3. The flange corner forming apparatus in accordance with Claim 1 wherein said movement means for said wedge moves said wedge as said movement means for said forming roll moves said roll.

4. The flange corner forming apparatus in accordance with Claim 3 wherein said movement of said wedge is at a rate differing from that of said forming roll.

5. The flange corner forming apparatus in accordance with Claim 1 wherein said movement of said wedge is incremental.

6. The flange corner forming apparatus in accordance with Claim 1 wherein said movement of said wedge is initiated after initial movement of said forming roll.

7. The flange corner forming apparatus in accordance with Claim 1 wherein said wedge is moved oppositely of said roll.

8. The flange corner forming apparatus in accordance with Claim 1 wherein said clamping means is a pressure foot.

9. The flange corner forming apparatus in accordance with Claim 1 wherein there is included a shear cooperating with said die to trim the edge portion of the workpiece flange.

10. The flange corner forming apparatus in accordance with Claim 1 wherein said forming roll has a circumferential groove with sloping sides to conform substantially to the corner and adjacent side surfaces of said die.

11. The flange corner forming apparatus in accordance with Claim 1 wherein said wedge has a generally V-shaped groove substantially conforming to said die corner and slidable thereon.

12. The flange corner forming apparatus in accordance with Claim 1 wherein in said wedge has a sloped surface against which the flange bears to deter material from moving horizontally and to increase material flow downwardly.

13. In a method for forming the corner of a flange on a workpiece, the steps comprising;

(a) providing a sheet metal workpiece having a flange extending along at least two sides thereof and forming corner;

(b) clamping said workpiece on a die having intersecting side surfaces intersecting in a corner configuration approximating the desired flange corner configuration for said workpiece and with said workpiece flange extending along said side surfaces thereof;

(c) moving against and along said flange corner of said workpiece a forming roll having a configuration closely approximating that desired for the finished corner of said flange, said movement of said forming roll bending said flange against said corner and side surfaces of said die; and

(d) locating between said die and said workpiece flange a wedge having a configuration approximating the contour desired for the corner of the flange of said workpiece, said wedge supporting said corner of said flange during said movement of said forming roll; and

(e) moving said wedge and said forming roll downwardly to form said flange about said die corner.

14. The flange corner forming method in accordance with Claim 13 wherein said wedge is moved in the same direction as said movement of said forming roll.

15. The flange corner forming method in accordance with Claim 13 wherein said wedge and said forming roll are moved concurrently as said flange is being formed by movement of said forming roll.

16. The flange corner forming method in accordance with Claim 13 wherein said wedge is moved downwardly at a rate differing from that of said forming roll.

17. The flange corner forming method in accordance with Claim 13 wherein said movement of said wedge is initiated after movement of said forming roll.

18. The flange corner forming method in accordance with Claim 13 wherein, subsequent to said forming of said flange, a shear is moved to cooperate with said die to trim the edge portion of the flange.